

TABLE 3.—*San Francisco, 1899—Continued.*

	July.	August.	September.	October.	November.	December.	Annual.
Mean actual pressure.....	29.78	29.78	29.83	29.83	29.88	29.98	29.87
Mean maximum temperature.....	61.5	63.5	65.1	66.1	61.0	54.8	60.7
Mean minimum temperature.....	50.3	53.1	51.3	52.5	52.6	44.4	49.1
Mean monthly temperature.....	55.9	58.3	58.2	59.3	56.8	49.6	54.9
Highest temperature.....	73	78	73	94	65	63	94
Lowest temperature.....	48	50	48	46	48	37	31
Dew-point.....	50	52	52	50	52	44	48
Relative humidity.....	87	84	89	78	86	83	83
Total rainfall.....	00.0	T.	00.0	3.92	3.79	2.65	23.23
Greatest 24-hour rainfall.....	00.0	T.	00.0	1.94	1.51	1.17	2.15
Mean cloudiness.....	3.6	3.3	3.0	3.0	5.8	3.8	4.0
Average hourly wind velocity.....	15.3	14.4	12.6	8.5	6.6	8.6	11.0
Prevailing wind direction.....	sw.	sw.	sw.	w.	se.	n.	w.
Maximum wind velocity.....	41	39	40	41	30	30	47
Maximum wind direction.....	w.	w.	w.	w.	sw.	sw.	sw.
Clear days.....	16	18	20	21	8	18	185
Partly cloudy days.....	11	11	8	5	11	6	104
Cloudy days.....	4	2	2	5	11	7	76
Days with .01 rainfall.....	0	0	0	9	12	10	67
Days with .01 rainfall.....	0	0	0	6	11	10	52
Actual hours sunshine.....	294.1	308.4	292.5	272.5	129.1	190.5	312.3
Percentage of sun-shine.....	65	73	78	78	42	64	69
Mean daily range of temperature.....	11.3	10.4	13.8	13.6	8.4	10.4	11.6
Mean daily change of temperature.....	2.1	2.0	2.2	3.4	1.9	2.3	2.6
Total wind movement.....	11,358	10,722	9,066	6,298	4,757	6,430	96,802

threw at each other. As the region was one of volcanic activity in comparatively recent times, and as hot springs and extinct craters are still to be seen, I thought at first that this must be a traditional account of a volcanic eruption. Subsequent investigation, however, showed that the story had its origin in a meteorological phenomenon. At first I was skeptical as to the truth of what follows. After hearing substantially the same story from ten or twelve men whom I saw in five different places separated by an extreme distance of 40 or more miles, I became thoroughly convinced of its truth. It may be a common occurrence, but I have never heard of it and can find no account of it in the few books at my command.

The facts, upon which all agree, are as follows: A ball of fire is sometimes seen to start from one mountain and go like a flash to another. At the same time there is a sound like thunder. This occurs by day or by night, although by day no light is seen. It always occurs when the sky is clear and never when it is cloudy. It sometimes happens two or three times in a year, and then again is not seen for several years. For the last two years it has not been seen. It is most common (or possibly never happens except) in the fall, at the end of the long, dry season of three months. The mountains show no special features different from other mountains. I visited one of them, Karaoghlon (Black Son) Mountain, and found it to be composed of metamorphic schistose shale of cretaceous age. Its height is 7,350 feet, and the top is comparatively flat. One observer said that a glow remained after the flash, but all the rest contradicted this. Another said that the ball of fire was first small, but grew larger as it passed over, and then grew smaller again. He evidently was between the two mountains.

The location and course of the flashes may be seen from the accompanying sketch map. In every case the flash crosses the Euphrates River, which here flows through a deep, pre-

ELECTRIC PHENOMENA IN THE EUPHRATES VALLEY.

By ELLSWORTH HUNTINGTON, Euphrates College, Harpoot, Turkey, dated July 21, 1900.

During a recent ten days' geological trip through an almost unvisited part of the Taurus Mountains to the south of Harpoot I heard of a phenomenon which I should be glad to have you explain, either by letter or through the columns of the REVIEW. Before leaving Harpoot I was told by a man from Aivose that Keklujek Mountain, near his village, fought with Ziaret Mountain, on the other side of the Euphrates River. The weapons were balls of light, which the mountains

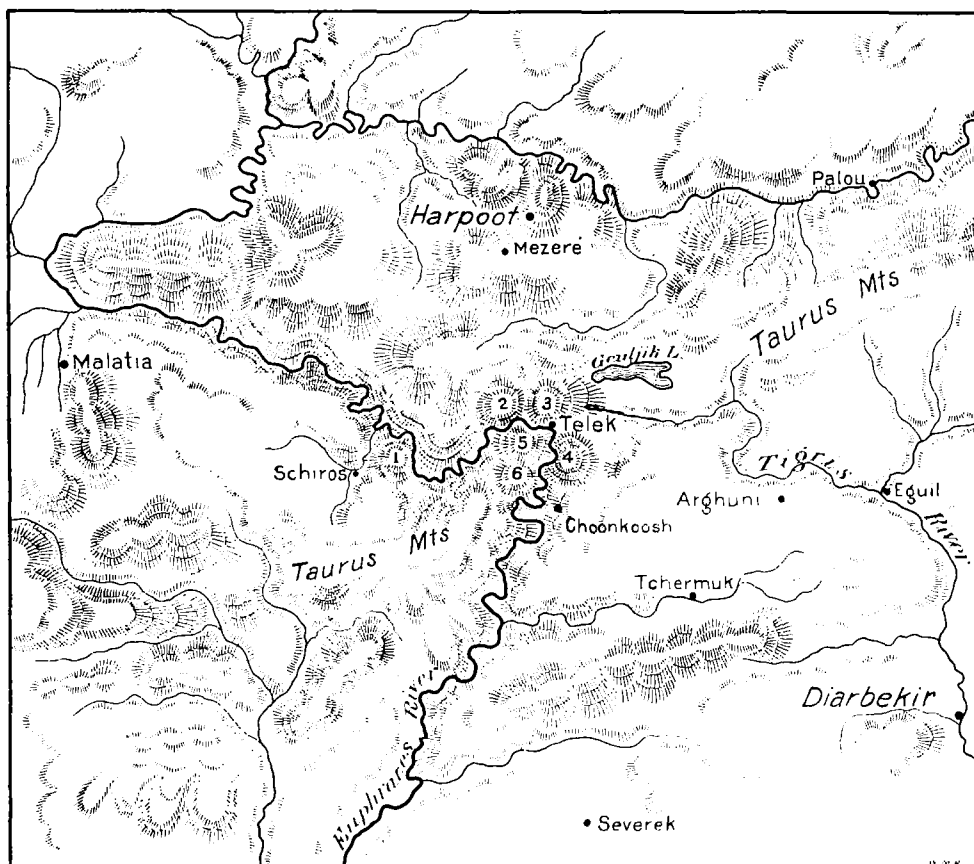


FIG. 2.—Showing mountains 1-6, from which flashes are seen to go. The flashes go between Nos. 1 and 2; 2 and 5; 3 and 5; 4 and 5; and 4 and 6. The names of the mountains are: No. 1, Chakchak, altitude 7,400 feet; No. 2, Keklujek, 6,500 feet; No. 3, Karaoghlon, 7,350 feet; No. 4, Hindi Baba, 5,500 feet; No. 5, Ziaret, 7,500 feet; No. 6, no name.

cipitous valley, at an elevation of 2,000 feet above sea level, or at from 3,500 to 5,500 feet below the tops of the mountains. The valley and the lightning seem to have some connection. I asked about other mountains, e. g., whether the flash ever went from Zialet to Chakchak (No. 5 to No. 1), and was told that it never went except as indicated on the map. Between any two mountains of those indicated it goes indifferently in either direction. Zialet Mountain stands out prominently and is said to be visible from all the cities named on the map, viz, Harpoot, Malatia, Arghuni, Choonkoosh, Diarbekir, Severek, and Oorfa.

In several places the people said that this lightning was seen only when Turkey was at war. Later, at Kefferdis, near Mount Zialet, we heard the origin of this tradition. Once at a time of a war scare lightning flashed from Mount Zialet. The people in Malatia heard the sound of the thunder. No clouds were in sight and they did not think it could be thunder. So they said: "The Russians are coming; we hear their guns."

If you or your readers have heard of similar phenomena in any part of the world, may I ask for information in regard to the conditions and causes?

SUDDEN DISAPPEARANCE OF ICE ON THE LAKES.

By H. H. TEN BROECK, Braidentown, Fla.

On page 114 of the MONTHLY WEATHER REVIEW for March, 1900, is a note on the sudden disappearance of ice from lakes in the spring. While living in Wisconsin I noted this phenomenon, and was told the usual explanation, namely, that the ice got rotten and sank. Knowing this to be irrational, I examined the matter and at once found out the cause. After a period of thawing weather the upper surface of the ice becomes a mass of sharp points, still hard and clear, and 6 or 8 inches thick, and capable of bearing one's weight, apparently as strong as ever. But each of the sharp points is the end of a crystal of ice, extending through the mass. As the disintegration of the ice proceeds the crystals become more distinct in their formation until the whole mass gives way. The crystals separate from each other and float on their sides as a loose mass of small pieces which rapidly melt. In shallow water the process is quicker than in deep water, as I found out once in crossing a lake. Where I got on the ice the lake water was deep, the ice dark and solid, though the surface was covered with the sharp points. On reaching the other side, where the water was three or four feet deep, the ice was of a light green color, and when I stepped on it the ice broke up into separate crystals under me, or rather around me, and I at once went through. Within a few hours after the deep-water ice became disintegrated and soon melted. The mystery of the sudden disappearance of the ice is simply due to the sudden change of its particles, since the warmth breaks up the solid mass into separate small crystals. But none of these are rotten—they are clear and solid, and float on the surface of the water as long as a piece is left.

METEOROLOGICAL NOTES FROM PORTO RICO.

By R. M. GEDDINGS, Section Director, dated San Juan, Aug. 9, 1900.

It has been frequently noticed, at least in San Juan, that while thunderstorms are numerous, though not severe, they nearly all present the following peculiarity, viz: That rarely does the lightning precede the rain. Frequent heavy showers occur with no accompanying thunder, which is only heard after the rain has nearly ceased. The matter has been looked up, but no explanation which could fit the case was found

until the article in the April MONTHLY WEATHER REVIEW, entitled "The formation of large rain drops," was received. In this article appears the following paragraph:

There is some plausibility in the hypothesis that the critical electrical condition, which results in lightning, is directly due to the disruption of the condition of extreme supersaturation and the sudden formation of large drops of water.

May not this explain the phenomenon? I must confess that attention was not called to this before, because I was afraid that I might be asserting something which was already well known, but the paragraph referred to, showing the matter to be still under investigation, emboldens me to call attention to it. It had, up to this time, been thought to have something to do with the liberation of latent heat.

There is another thing to which I should like to call attention, but this is referred to in Davis' meteorology (page 193), and that is the lowering of the relative humidity in the eye of a cyclone. While no center has passed directly over this station during the past year, it was noticed during the last hurricane season that this happened about twenty-four to forty-eight hours in advance of the storms which passed near this island. Attempts have been made to prove this by tabulation, but the results have not been altogether satisfactory, for sometimes it occurred but slightly and sometimes not at all, but it is thought that a series of observations taken at close intervals would prove the fact. The hurricane of San Ciriaco occurred here last year on August 8. At 8 p. m. of the 6th the relative humidity was 73°, and at 8 a. m. of the 7th it was 68°, the preceding morning showing 74°. On the 30th of August a hurricane passed to the south of the island, the record being as follows:

Date.	Relative humidity.	
	a. m.	p. m.
Aug 1899.	%	%
27.....	73	80
28.....	72	75
29.....	75	86
30.....	77	87
31.....	71	98

Very little can be learned from this record, the drop being very slight.

On September 8 and 9 a hurricane passed to the northeast of the island, the record being as follows:

Date.	Relative humidity.	
	a. m.	p. m.
Sept 1899.	%	%
6.....	83	78
7.....	82	76
8.....	82	77
9.....	85	80
10.....	73	78

This again proves very little. The opportunity for investigation has been very slight, as only one hurricane passed very near the station during the past year, but, as before stated, I believe the fall in relative humidity to be a very valuable sign of the approach of a hurricane.

FORECASTING FOR THE FARMER.

By C. D. REED, Observer, Weather Bureau, dated August 24, 1900.

Recent instructions from the Chief of the Weather Bureau place the character of forecasts more nearly in the hands of the local forecaster. Such features may be included as, in the judgment of the forecast official, will be of the greatest local value. The forecast becomes desirable in proportion as it covers all local conditions in its territory.